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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/522,294	03/09/2000	Manabu Kato	35.C14341	3313

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EXAMINER

PHAM, HAI CHI

ART UNIT	PAPER NUMBER
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2861

DATE MAILED: 03/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/522,294

Applicant(s)

KATO, MANABU

Examiner

Hai C Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18, 40 and 41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-11, 40 and 41 is/are allowed.
- 6) ☒ Claim(s) 12-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 8, 11, and 18 are objected to because of the following informalities:
 - Claim 8, line 2, "a plurality of light beams" should read --*the* plurality of light beams-- since it refers back to a previously recited element;
 - Claim 11, lines 2-3, "a plurality of light beams" should read --*the* plurality of light beams--;
 - Claim 18, line 2, "a plurality of light beams" should read --*the* plurality of light beams--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 12 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Shiraishi (U.S. 4,878,066).

Shiraishi discloses a multi-beam scanning apparatus having a plurality of light beam emitting sections (180, 182, 184), a light deflector (polygon mirror 72) for deflecting a plurality of light beams emitted respectively from said plurality of light beam

emitting sections, a scanning optical system (imaging lenses 80, 82) for focussing said plurality of light beams deflected by said light deflector on a surface to be scanned (surface of the photoreceptor 66), a photodetector (172) for controlling the timing of the start of scanning of said plurality of light beams by detecting a part of said plurality of light beams deflected by said light deflector as detection light beams, a detection optical element (lens 122, Figs. 24A-24C) for converging said detection light beams (118) and leading them to said photodetector, the detection optical element being disposed orthogonally to optical path of the detection light beams such that its effective optical surfaces facing orthogonally relative to the detection light beams.

Shiraishi further teaches an incident optical system (collimator lens 68) for leading the plurality of light beams to said optical deflector.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraishi in view of Kato (U.S. 5,963,356).

Shiraishi discloses all the basic limitations of the claimed invention except for the detection optical element being an anamorphic lens.

However, Kato, an acknowledged prior art, discloses an anamorphic detection optical element (BD lens 42, Fig. 2) for converging the deflected laser beam toward the BD sensor (9), the BD lens being disposed orthogonally relative to the deflected laser beam, and being integrally formed with the cylindrical lens (41), which is a second lens used to focus the laser beam emitted by the laser source (1) onto the surface of the polygon mirror (5).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Shiraishi with the aforementioned teaching of Kato. By doing so, it is possible to design a compact configuration for the entire optical scanning device while maintaining a high accuracy optical scanning performance.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraishi in view of Kanoto et al. (U.S. 5,365,259).

Shiraishi discloses all the basic limitations of the claimed invention except for the detection optical element being made of a plastic material.

however, Kanoto et al. discloses a scanning optical device comprising a detection optical element (24c, Fig. 7) for converging the deflected laser beam toward the start of scan photosensor (11), the detection lens being disposed orthogonally relative to the deflected laser beam, and along with the integrally designed scanning lens (24) made of a plastic material.

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It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Shiraishi to have the detection lens made of plastic as taught by Kanoto et al. By doing so, it is possible to provide a light optical lens for converging and focusing the deflected light beams on the detecting area of the photodetector.

1. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraishi in view of Kamikubo (U.S. 6,124,962).

Shiraishi discloses all the basic limitations of the claimed invention except for the scanning optical system comprising of a refraction optical element and a diffraction optical element.

However, Kamikubo discloses a scanning optical system whose scanning lenses comprise refraction lens elements with a diffraction lens structure for compensating compensates for the lateral chromatic aberration caused by the refraction lens elements.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the scanning device of Shiraishi by incorporating the refraction and diffraction lens elements as taught by Kamikubo et al. Doing so would eliminate the chromatic aberration when a light source emitting a plurality of light beams of different wavelengths are used.

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7. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraishi in view of Kamikubo et al., as applied to claims 12 and 15 above, and further in view of Kanoto et al.

Shiraishi, as modified by Kamikubo et al., discloses all the basic limitations of the claimed invention except for the detection optical element and the scanning lens being integrally formed and being both made of a plastic material.

However, Kanoto et al. discloses a scanning optical device comprising a detection optical element (24c, Fig. 7) for converging the deflected laser beam toward the start of scan photosensor (11), the detection lens being disposed orthogonally relative to the deflected laser beam, and being integral to the scanning lens (24), both being made of a plastic material.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Shiraishi, as modified by Kamikubo et al., with the aforementioned teaching of Kanoto et al. By doing so, it is possible to provide a light and compact optical scanning device.

Allowable Subject Matter

8. Claims 1-11, 40, and 41 are allowed.

9. The following is an examiner's statement of reasons for allowance: none of the prior art made of record teaches the claimed features related to the controlled timing of the start scanning of the plurality of light beams such that the centers of the scanning areas of the light beams are aligned with each other while allowing the starting points of

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scanning of said light beams to differ from each other when the plurality of the light beams have respective wavelengths that are different from each other, as well as the combined limitations set forth in the independent claim 1.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

10. Applicant's arguments with respect to claims 12-18 have been considered, and are moot in view of the new grounds of rejection as stated above.

11. With regard to Applicant's argument concerning Kanoto et al. not "disclos[ing] or suggest[ing] the optical surfaces of the condenser lens being arranged orthogonally relative to the single laser beam", it is noted that the following limitation "said detection optical element has its optical surfaces arranged orthogonally relative to said detection light beams" (emphasis added) recited at lines 12-13 of claim 12, conveys the idea that the detection optical element is disposed perpendicular to the light path of the detection light beams such that the effective surfaces of the detection optical element are facing orthogonally relative to the detection light beams. Based on the above interpretation, Kanoto et al., as well as Shiraishi, satisfactorily disclose such claimed limitation.

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Contact information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on (703) 308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



HAI PHAM
PRIMARY EXAMINER
March 18, 2002